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EXAMINER	
CLEARY, THOMAS J	
ART UNIT	**PAPER NUMBER**
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/785,035	BROOKS ET AL.	
	Examiner	Art Unit	
	Thomas J. Cleary	2111	

-- Th MAILING DATE of this communication appears on the cover sheet with the correspondence addr ss --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *30 December 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 3, 5, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Number 5,761,462 to Neal et al. ("Neal"), US Patent Number 6,421,728 to Mohammed et al. ("Mohammed"), and US Patent Number 5,832,262 to Johnson et al. ("Johnson").

3. In reference to Claim 1, Neal teaches a plurality of processors, each communicatively coupled to the system bus, that perform a plurality of processing functions (See Figures 1 and 2 and Column 4 Lines 17-19); and a bridge that communicatively couples the system bus and the peripheral bus (See Figure 1 Number 11, Figure 2 Number 30, and Column 2 Lines 2-15). Neal does not teach that the plurality of processing functions are partitioned between at least two of the plurality of processors; a peripheral bus that is operable to perform transfer of cable media; and a peripheral processing device, communicatively coupled to the peripheral bus, that is

operable to perform processing of a selectively off-loaded portion of the cable media. Mohammed teaches a cable modem interface (See Figure 1 Number 28 and Column 5 Lines 27-31), connected to a bus capable of transferring cable media (See Figure 1 Number 24 and Column 5 Lines 22-27), which can be a PCI bus similar to the PCI bus of Neal; and a processor coupled to the bus for performing processing on the cable media (See Figure 1 Number 26). Johnson teaches scheduling a plurality of tasks among a plurality of processors (See Column 1 lines 21-29 and Column 2 Lines 45-48).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the multi-processor multi-bus architecture of Neal with the cable modem interface and processor of Mohammed and the multi-processor task scheduler of Johnson, resulting in the invention of Claim 1, in order to provide broadband data delivery using existing infrastructure (See Column 1 Lines 39-47 of Mohammed); and to allow multiple processes to be distributed among a plurality of processors and thus operated on in parallel to increase the speed of the system (See Column 3 Lines 21-24 of Johnson).

4. In reference to Claim 3, Neal, Mohammed, and Johnson teach the limitations as applied to Claim 1 above. Johnson further teaches that one of the plurality of processors is capable of performing at least one of message processing and scheduling (See Figure 1 Number 2 and Column 2 Lines 45-48).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the multi-processor multi-bus architecture of Neal with

the cable modem interface and processor of Mohammed and the multi-processor task scheduler of Johnson, resulting in the invention of Claim 3, in order to provide broadband data delivery using existing infrastructure (See Column 1 Lines 39-47 of Mohammed); and to allow multiple processes to be distributed among a plurality of processors and thus operated on in parallel to increase the speed of the system (See Column 3 Lines 21-24 of Johnson).

5. In reference to Claim 5, Neal, Mohammed, and Johnson teach the limitations as applied to Claim 1 above. Johnson further teaches at least one additional processing device, communicatively coupled to the bus, that is operable to perform processing of at least one additional selectively off-loaded portion of the data (See Figure 1 Number 4 and Column 4 Lines 29-41).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the multi-processor multi-bus architecture of Neal with the cable modem interface and processor of Mohammed and the multi-processor task scheduler of Johnson, resulting in the invention of Claim 5, in order to provide broadband data delivery using existing infrastructure (See Column 1 Lines 39-47 of Mohammed); and to allow multiple processes to be distributed among a plurality of processors and thus operated on in parallel to increase the speed of the system (See Column 3 Lines 21-24 of Johnson).

6. In reference to Claim 6, Neal, Mohammed, and Johnson teach the limitations as applied to Claim 1 above. Neal further teaches that the processors can be running a variety of different operating systems (See Column 3 Lines 43-50).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the multi-processor multi-bus architecture of Neal with the cable modem interface and processor of Mohammed and the multi-processor task scheduler of Johnson, resulting in the invention of Claim 6, in order to provide broadband data delivery using existing infrastructure (See Column 1 Lines 39-47 of Mohammed); and to allow multiple processes to be distributed among a plurality of processors and thus operated on in parallel to increase the speed of the system (See Column 3 Lines 21-24 of Johnson).

7. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Neal, Mohammed, and Johnson as applied to Claim 1 above, and further in view of MCNS/DOCSIS MAC Clears A Path For The Cable-Modem Invasion by Lee Goldberg ("Goldberg").

8. In reference to Claim 2, Neal, Mohammed, and Johnson teach the limitations as applied to Claim 1 above. Neal, Mohammed, and Johnson do not teach one of the plurality of processors supporting upstream data transfer of cable media and at least one other of the plurality of processors supporting downstream data transfer of the cable media. Mohammed further teaches that the cable modem is capable of both

transmitting and receiving data (See Column 4 Lines 24-34 and Column 5 Lines 27-31). Goldberg teaches a media access controller chip for cable modems that has separate upstream and downstream processors (See Page 70 Figure 2 of Goldberg).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the device of Neal, Mohammed, and Johnson with the separate upstream and downstream processors of Goldberg, resulting in the invention of Claim 2, in order to allow the upstream and downstream communications to use different frequency bands of the cable broadcast spectrum (See Page 69 Column 3 and Page 70 Column 1 of Goldberg).

9. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Neal, Mohammed, and Johnson as applied to Claim 1 above, and further in view of US Patent Number 6,457,074 to Gaillard et al. ("Gaillard").

10. In reference to Claim 4, Neal, Mohammed, and Johnson teach the limitations as applied to Claim 1 above. Gaillard teaches a DMA controller that is included within the bus bridge and allows each channel complete autonomy in operation (analogous to providing a portion of the cable media to one of the plurality of processors and providing the off-loaded portion of the cable media to the peripheral processing device) (See Column 10 Lines 14-30 of Gaillard).

It would have been obvious to one of ordinary skill in the art at the time the invention was made would combine the device of Neal, Mohammed, and Johnson with

the DMA bus bridge of Gaillard, resulting in the invention of Claim 4, in order to improve system efficiency (See Column 9 Lines 66-67 and Column 10 Lines 1-5 of Gaillard).

11. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Neal, Mohammed, and Johnson as applied to Claim 1 above, and further in view of US Patent Number 5,848,257 to Angle et al. ("Angle").

12. In reference to Claim 7, Neal, Mohammed, and Johnson teach the limitations as applied to Claim 1 above. Neal, Mohammed, and Johnson do not teach the plurality of processing functions comprising media access control functionality. Angle teaches a multiprocessor system in which a plurality of processes are being run, said system optimized for operations involving data packet switching in a media access control layer (See Column 1 Lines 14-29 of Angle).

It would have been obvious to one of ordinary skill in the art at the time the invention was made would combine the device of Neal, Mohammed, and Johnson with the multiprocessor media access control layer device of Angle, resulting in the invention of Claim 7, in order to facilitate high data packet processing rates (See Column 1 Lines 56-67 of Angle) which are associated with high bandwidth devices such as cable modems.

13. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Neal, Mohammed, and Johnson as applied to Claim 1 above, and further in view of US Patent Number 5,734,918 to Odawara et al. ("Odawara").

14. In reference to Claim 8, Neal, Mohammed, and Johnson teach the limitations as applied to Claim 1 above. Neal, Mohammed, and Johnson do not teach one of the plurality of processors employing embedded code to support media access control functionality. Odawara teaches a LAN adapter (analogous to a cable modem) which has several specialized processors, including a media access control layer processor (See Figure 1 and Column 4 Lines 11-22 of Odawara).

It would have been obvious to one of ordinary skill in the art at the time the invention was made would combine the device of Neal, Mohammed, and Johnson with the media access control processor of Odawara, resulting in the invention of Claim 8, in order to provide a means for controlling the interface to the network (See Column 4 Lines 11-13 of Odawara).

15. Claims 9, 10, 16, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Neal, Mohammed, Johnson, and US Patent Number 4,872,197 to Pemmaraju ("Pemmaraju").

16. In reference to Claim 9, Neal teaches a bifurcated bus structure comprising a first and second bus (See Figure 2 Numbers 28 and 29); a plurality of processors coupled to

the first bus that is operable to perform a plurality of processing functions (See Figures 1 and 2 and Column 4 Lines 17-19); and an input/output interface communicatively coupled to the second bus that is operable to perform data transfer of a plurality of data to the second bus (See Figure 2 Numbers 40-42 and Column 4 Lines 24-43). Mohammed teaches a co-processor communicatively coupled to the second bus that is operable to support processing of cable media that is selectively off-loaded from at least one of the plurality of processors (See Figure 1 Numbers 24, 26, and 28, and Column 5 Lines 22-31). Johnson teaches a partitioned processor structure communicatively coupled to the first bus comprising a plurality of processors that is operable to perform a plurality of processing functions (See Column 1 lines 21-29 and Column 2 Lines 45-48). Pemmaraju teaches an I/O controller providing DMA functions (See Figure 4 Number 110 and Column 7 Lines 41-56) that communicatively couples busses together (See Figure 4) and is operable to allow data to be transferred directly to a device (analogous to off-loading at least one function of the plurality of functions to the co-processor) (See Column 7 Lines 50-52).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the multi-processor multi-bus architecture of Neal with the cable modem interface and processor of Mohammed, the multi-processor task scheduler of Johnson, and the DMA controller of Pemmaraju, resulting in the invention of Claim 9, in order to provide broadband data delivery using existing infrastructure (See Column 1 Lines 39-47 of Mohammed); to allow multiple processes to be distributed among a plurality of processors and thus operated on in parallel to increase the speed

of the system (See Column 3 Lines 21-24 of Johnson); and to increase speed by allowing data to be transferred directly to a device without involving the CPU (See Column 7 Lines 50-52 of Pemmaraju).

17. In reference to Claim 10, Neal, Mohammed, Johnson, and Pemmaraju teach the limitations as applied to Claim 9 above. Johnson further teaches at least one additional processing device, communicatively coupled to the bus, that is operable to perform processing of at least one additional selectively off-loaded portion of the data (See Figure 1 Number 4 and Column 4 Lines 29-41).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the multi-processor multi-bus architecture of Neal with the cable modem interface and processor of Mohammed, the multi-processor task scheduler of Johnson, and the DMA controller of Pemmaraju, resulting in the invention of Claim 9, in order to provide broadband data delivery using existing infrastructure (See Column 1 Lines 39-47 of Mohammed); to allow multiple processes to be distributed among a plurality of processors and thus operated on in parallel to increase the speed of the system (See Column 3 Lines 21-24 of Johnson); and to increase speed by allowing data to be transferred directly to a device without involving the CPU (See Column 7 Lines 50-52 of Pemmaraju).

18. In reference to Claim 16, Neal, Mohammed, Johnson, and Pemmaraju teach the limitations as applied to Claim 9 above. Johnson further teaches the device is

constructed on an integrated circuit (See Column 2 Lines 27-29 and Column 3 Lines 21-24 of Johnson).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the multi-processor multi-bus architecture of Neal with the cable modem interface and processor of Mohammed, the multi-processor task scheduler and integrated circuit of Johnson, and the DMA controller of Pemmaraju, resulting in the invention of Claim 9, in order to provide broadband data delivery using existing infrastructure (See Column 1 Lines 39-47 of Mohammed); to allow multiple processes to be distributed among a plurality of processors and thus operated on in parallel to increase the speed of the system (See Column 3 Lines 21-24 of Johnson); to limit the physical space that the device will occupy on a printed circuit board (See Column 2 Lines 32-34 of Johnson); and to increase speed by allowing data to be transferred directly to a device without involving the CPU (See Column 7 Lines 50-52 of Pemmaraju).

19. In reference to Claim 17, Neal teaches performing media processing using a plurality of processors (See Figures 1 and 2 and Column 4 Lines 17-19). Johnson teaches a partitioned processor structure comprising a plurality of processors that is operable to perform media processing (See Column 1 lines 21-29 and Column 2 Lines 45-48); and selectively off-loading a portion of the media from at least one of the plurality of processors to a co-processor (See Figure 1 Number 4, Column 3 Lines 20-27 and Column 4 Lines 29-41). Pemmaraju teaches a plurality of peripheral co-

processors coupled to a communication line that can process the media received through said communication lines (See Figures 1 and 4, Column 1 Lines 54-65, Column 3 Lines 52-58, Column 4 Lines 7-14, and Column 5 Lines 41-55). Mohammed teaches a processor coupled to a bus capable of processing cable media received from a cable modem (See Figure 1 Number 26 and 28 and Column 5 Lines 27-31).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the plurality of processors of Neal with the multi-processor task scheduler of Johnson, the peripheral co-processors of Pemmaraju, and the cable media processing capability and processor of Mohammed, resulting in the invention of Claim 17, in order to allow multiple processes to be distributed among a plurality of processors and thus operated on in parallel to increase the speed of the system (See Column 3 Lines 21-24 of Johnson); coordinate the networking of the devices connected to the bus (See Column 1 Lines 62-65 and Column 6 Lines 13-18 of Pemmaraju); and to provide broadband data delivery using existing infrastructure (See Column 1 Lines 39-47 of Mohammed).

20. In reference to Claim 18, Neal, Mohammed, Johnson, and Pemmaraju teach the limitations as applied to Claim 17 above. Johnson further teaches the device is constructed on an integrated circuit (See Column 2 Lines 27-29 and Column 3 Lines 21-24 of Johnson).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the plurality of processors of Neal with the multi-

processor task scheduler of Johnson, the peripheral co-processors of Pemmaraju, and the cable media processing capability and processor of Mohammed, resulting in the invention of Claim 17, in order to allow multiple processes to be distributed among a plurality of processors and thus operated on in parallel to increase the speed of the system (See Column 3 Lines 21-24 of Johnson); to limit the physical space that the device will occupy on a printed circuit board (See Column 2 Lines 32-34 of Johnson); to coordinate the networking of the devices connected to the bus (See Column 1 Lines 62-65 and Column 6 Lines 13-18 of Pemmaraju); and to provide broadband data delivery using existing infrastructure (See Column 1 Lines 39-47 of Mohammed).

21. Claims 11 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Neal, Mohammed, Johnson, and Pemmaraju as applied to Claim 9 above, and further in view of AMBA: Enabling Reusable On-Chip Designs by David Flynn ("Flynn").

22. In reference to Claim 11, Neal, Mohammed, Johnson, and Pemmaraju teach the limitations as applied to Claim 9 above. Neal, Mohammed, Johnson, and Pemmaraju do not teach that the first bus employs an Advanced System Bus (ASB) protocol and the second bus employs an Advanced Peripheral Bus (APB) protocol. Flynn teaches use of both an ASB protocol and an APB protocol (See Page 25 Column 1 of Flynn).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the device of Neal, Mohammed, Johnson, and Pemmaraju with the busses of Flynn, resulting in the inventions of Claim 11, in order to

provide a low power system bus that supports burst-mode signaling, multiple bus masters, and high bandwidth signaling, and a lower power peripheral bus that has a low gate count and is static except when an I/O access occurs, thereby decoupling it from the high bandwidth activity of the system bus (See Page 25 Column 1 of Flynn).

23. In reference to Claim 15, Neal, Mohammed, Johnson, and Pemmaraju teach the limitations as applied to Claim 9 above. Neal, Mohammed, Johnson, and Pemmaraju do not teach that the second bus consumes power at a rate lower than the rate at which the first bus consumes power. Flynn teaches use of both an ASB protocol and an APB protocol (See Page 25 Column 1 of Flynn). Since the APB has a low gate count, has typically fewer data bits, and is static except for an I/O access, it uses less power than the ASB (See Page 25 Column 1 of Flynn).

It would have been obvious to one of ordinary skill in the art at the time the invention was made would combine the device of Neal, Mohammed, Johnson, and Pemmaraju with the busses of Flynn, resulting in the inventions of Claim 11, in order to provide a low power system bus that supports burst-mode signaling, multiple bus masters, and high bandwidth signaling, and a lower power peripheral bus that has a low gate count and is static except when an I/O access occurs, thereby decoupling it from the high bandwidth activity of the system bus (See Page 25 Column 1 of Flynn).

24. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Neal, Mohammed, Johnson, and Pemmaraju as applied to Claim 9 above, and further in view of Goldberg.

25. In reference to Claim 12, Neal, Mohammed, Johnson, and Pemmaraju teach the limitations as applied to Claim 9 above. Neal, Mohammed, Johnson, and Pemmaraju do not teach one of the plurality of processors supporting upstream data transfer of cable media and at least one other of the plurality of processors supporting downstream data transfer of the cable media. Mohammed further teaches that the cable modem is capable of both transmitting and receiving data (See Column 4 Lines 24-34 and Column 5 Lines 27-31). Goldberg teaches a media access controller chip for cable modems that has separate upstream and downstream processors (See Page 70 Figure 2 of Goldberg).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the device of Neal, Mohammed, Johnson, and Pemmaraju with the separate upstream and downstream processors of Goldberg, resulting in the invention of Claim 12, in order to allow the upstream and downstream communications to use different frequency bands of the cable broadcast spectrum (See Page 69 Column 3 and Page 70 Column 1 of Goldberg).

26. In reference to Claim 13, Neal, Mohammed, Johnson, and Pemmaraju teach the limitations as applied to Claim 9 above. Neal, Mohammed, Johnson, and Pemmaraju

do not teach the co-processor being operable to perform at least one of DES encryption and DES decryption. Goldberg teaches a media access controller chip that has a hardware implementation of DES encryption and decryption (See Page 70 Figure 2 and Page 80 Column 1 of Goldberg).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the device of Neal, Mohammed, Johnson, and Pemmaraju with the DES encryption processor of Goldberg, resulting in the invention of Claim 13, in order to provide a standardized method for ensuring the security of the data which is extremely difficult to defeat (See Page 74, Page 78 Column 3, and Page 80 Column 1 of Goldberg).

27. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Neal, Mohammed, Johnson, and Pemmaraju as applied to Claim 17 above, and further in view of Goldberg.

28. In reference to Claim 20 Neal, Mohammed, Johnson, and Pemmaraju teach the limitations as applied to Claim 17 above. Neal, Mohammed, Johnson, and Pemmaraju do not teach one of the plurality of processors supporting upstream data transfer of cable media and at least one other of the plurality of processors supporting downstream data transfer of the cable media. Mohammed further teaches that the cable modem is capable of both transmitting and receiving data (See Column 4 Lines 24-34 and Column

5 Lines 27-31). Goldberg teaches a media access controller chip for cable modems that has separate upstream and downstream processors (See Page 70 Figure 2 of Goldberg).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the device of Neal, Mohammed, Johnson, and Pemmaraju with the separate upstream and downstream processors of Goldberg, resulting in the invention of Claim 20, in order to allow the upstream and downstream communications to use different frequency bands of the cable broadcast spectrum (See Page 69 Column 3 and Page 70 Column 1 of Goldberg).

29. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Neal, Mohammed, Johnson, and Pemmaraju as applied to Claim 9 above, and further in view of Angle.

30. In reference to Claim 14, Neal, Mohammed, Johnson, and Pemmaraju teach the limitations as applied to Claim 9 above. Neal further teaches that the processors can be running a variety of different operating systems (See Column 3 Lines 43-50). Neal, Mohammed, Johnson, and Pemmaraju do not teach the plurality of processing functions comprising media access control functionality. Angle teaches a multiprocessor system in which a plurality of processes are being run, said system optimized for operations involving data packet switching in a media access control layer (See Column 1 Lines 14-29 of Angle).

It would have been obvious to one of ordinary skill in the art at the time the invention was made would combine the device of Neal, Mohammed, and Johnson with the multiprocessor media access control layer device of Angle, resulting in the invention of Claim 14, in order to facilitate high data packet processing rates (See Column 1 Lines 56-67 of Angle) which are associated with high bandwidth devices such as cable modems.

31. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Neal, Mohammed, Johnson, and Pemmaraju as applied to Claim 9 above, and further in view of Angle.

32. In reference to Claim 19, Neal, Mohammed, Johnson, and Pemmaraju teach the limitations as applied to Claim 17 above. Neal, Mohammed, Johnson, and Pemmaraju do not teach the plurality of processing functions comprising media access control functionality. Angle teaches a multiprocessor system in which a plurality of processes are being run, said system optimized for operations involving data packet switching in a media access control layer (See Column 1 Lines 14-29 of Angle).

It would have been obvious to one of ordinary skill in the art at the time the invention was made would combine the device of Neal, Mohammed, and Johnson with the multiprocessor media access control layer device of Angle, resulting in the invention of Claim 19, in order to facilitate high data packet processing rates (See Column 1 Lines

56-67 of Angle) which are associated with high bandwidth devices such as cable modems.

Response to Arguments

33. Applicant's arguments filed 30 December 2003 have been fully considered but they are not persuasive.

34. In response to Applicant's arguments with regard to Claims 1, 3, 5, and 6, the recitation "a cable modem having a programmable media access controller" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

35. In response to Applicant's arguments with regard to Claims 1, 3, 5, and 6 that the cable modem of Mohammed is not a network device that receives and transmits data, Examiner notes that Mohammed teaches that "data is transmitted to client 22 on cable 20" (See Column 4 Lines 25-34) and thus is received by cable modem 28; and "cable

modem 28 is also responsible for transmitting the Ethernet packets from client 22 to headend server 8 over cable 20" (See Column 5 Lines 27-31). Further in response to Applicant's argument that the references fail to show certain features of Applicant's invention, it is noted that the features upon which applicant relies (i.e., receiving and transmitting data) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

36. In response to Applicant's arguments with regard to Claims 1, 3, 5, and 6 that "There is no mention of a media access controller in Mohammed, Neal, or Johnson, and one of ordinary skill in the art would have no idea from Mohammed, Neal, or Johnson what a media access controller is, much less that a media access controller would be needed in the cable modem 14 or cable modem 28 of Mohammed, much less one that is programmable", Examiner notes that a media access controller is well known to those of ordinary skill in the art and must be included in any device using a protocol attempting to access a network or similar structure. Further, Examiner notes that because a media access controller requires some type of programming to perform its function, a media access controller is inherently programmable.

37. In response to Applicant's argument with regard to Claim 1 that the Examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction

based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). In this case, the Examiner has clearly indicated the teachings in the applied art that would result in the combination discussed in the above rejection.

38. In response to Applicant's arguments with regard to Claim 2 that Goldberg is directed to the rapid development of inexpensive consumer-oriented cable data appliances, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

39. In response to Applicant's arguments with regard to Claim 2 that Goldberg does not teach a programmable media access controller or provide a motivation for combining Goldberg with Neal, Mohammed, and Johnson, Examiner notes that because a media access controller requires some type of programming to perform its function, a media access controller is inherently programmable. Further, Examiner notes that

Goldberg is being relied upon as a teaching reference providing evidence that a media access controller with separate upstream and downstream processors was well known in the art. The Examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the device of Neal, Mohammed, and Johnson with the separate upstream and downstream processors of Goldberg, resulting in the invention of Claim 2, in order to allow the upstream and downstream communications to use different frequency bands of the cable broadcast spectrum (See Page 69 Column 3 and Page 70 Column 1 of Goldberg).

40. In response to Applicant's comments concerning the quality of Goldberg provided by the Examiner, Examiner notes that the copy of Goldberg relied upon in rejecting Claims 2, 12, 13, and 20 is the copy supplied to the Office by the Applicant in the Information Disclosure Statement filed on 30 August 2001.

41. In response to Applicant's arguments with regards to Claim 4 that there is no disclosure in Gaillard that it can be used in a cable modem or even in any modem,

much less that it can be used to selectively provide a portion of the cable media to one of the plurality of processors and to provide the off-loaded portion of the cable media to the peripheral processing device, the recitation "a cable modem having a programmable media access controller" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951). Examiner notes that Gaillard teaches a DMA controller included as part of a bus bridge, similar to the bus bridge of Neal, that performs a function analogous to selectively providing a portion of the cable media to one of the plurality of processors and providing the off-loaded portion of the cable media to the peripheral processing device. It would have been obvious to one of ordinary skill in the art at the time the invention was made would combine the device of Neal, Mohammed, and Johnson with the DMA bus bridge of Gaillard, resulting in the invention of Claim 4, in order to improve system efficiency (See Column 9 Lines 66-67 and Column 10 Lines 1-5 of Gaillard).

42. In response to Applicant's argument with regard to Claim 7 that the media access controller taught by Angle is for use in local or wide area network segments in a data communications network with no cable modem functionality or application disclosed or

suggested, Examiner notes that as understood in the art and in the absence of an alternative definition in the specification, a cable modem is "an interface box or computer adapter board that enables cable television to serve as a data link." The definition does not preclude a cable modem from being used as a local or wide area network connection (See "cable modem" on Page 80 of Novell's Dictionary of Networking). During patent examination, the pending claims must be given their broadest reasonable interpretation consistent with the specification to reduce the possibility that the claim, once issued, will be interpreted more broadly than is justified. Examiner further notes that the device of Angle, directed to local and wide area networks, is in an analogous field to the device of Mohammed, directed to a cable modem device, in that both devices are designed to allow broadband data communications.

43. In response to Applicant's argument with regard to Claim 7 that there is no suggestion to combine the references, the Examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, it would have been obvious to one of ordinary skill in the art at the time the invention was made would combine the device of Neal, Mohammed, and Johnson with the

multiprocessor media access control layer device of Angle, resulting in the invention of Claim 7, in order to facilitate high data packet processing rates (See Column 1 Lines 56-67 of Angle) which are associated with high bandwidth devices such as cable modems.

44. In response to Applicant's argument with regard to Claim 8 that a LAN adapter cannot be used as a cable modem, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). A LAN adapter is analogous to a cable modem in that they both provide broadband data communication capability, and thus, one of ordinary skill in the art would use features found in LAN adapters when designing a cable modem.

45. In response to Applicant's arguments with regard to Claim 8 that Mohammed fails to disclose that a media access controller is used in a cable modem and that there is no motivation to make the media access controller programmable, Examiner notes that a media access controller is well known to those of ordinary skill in the art and are inherently included in any device attempting to access a network or similar structure. Further, Examiner notes that because a media access controller requires some type of

programming to perform its function, a media access controller is inherently programmable.

46. In response to Applicant's argument with regard to Claim 8 that there is no suggestion to combine the references, the Examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, it would have been obvious to one of ordinary skill in the art at the time the invention was made would combine the device of Neal, Mohammed, and Johnson with the media access control processor of Odawara, resulting in the invention of Claim 8, in order to provide a means for controlling the interface to the network (See Column 4 Lines 11-13 of Odawara).

47. In response to Applicant's argument with regard to Claims 9, 10, 16, 17, and 18 that there is no motivation to provide the cable modem of Mohammed with the functions specified in the aforementioned claims, Examiner notes that Mohammed teaches that "data is transmitted to client 22 on cable 20" (See Column 4 Lines 25-34) and thus is received by cable modem 28; and "cable modem 28 is also responsible for transmitting the Ethernet packets from client 22 to headend server 8 over cable 20" (See Column 5

Lines 27-31). Further, the Examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the multi-processor multi-bus architecture of Neal with the cable modem interface and processor of Mohammed, the multi-processor task scheduler of Johnson, and the DMA controller and peripheral co-processors of Pemmaraju, resulting in the inventions of Claims 9, 10, 16, 17, and 18, in order to provide broadband data delivery using existing infrastructure (See Column 1 Lines 39-47 of Mohammed); to allow multiple processes to be distributed among a plurality of processors and thus operated on in parallel to increase the speed of the system (See Column 3 Lines 21-24 of Johnson); to limit the physical space that the device will occupy on a printed circuit board (See Column 2 Lines 32-34 of Johnson); to coordinate the networking of the devices connected to the bus (See Column 1 Lines 62-65 and Column 6 Lines 13-18 of Pemmaraju); and to increase speed by allowing data to be transferred directly to a device without involving the CPU (See Column 7 Lines 50-52 of Pemmaraju).

48. In response to Applicant's argument with regard to Claims 9, 10, 16, 17, and 18 that the Examiner's conclusion of obviousness is based upon improper hindsight

reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). In this case, the Examiner has clearly indicated the teachings in the applied art that would result in the combination discussed in the above rejection.

49. In response to Applicant's arguments with regard to Claims 9, and 10, the recitation "a cable modem device" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

50. In response to Applicant's argument with regard to Claim 17 and 18 that the cable modems of Mohammed are required only for transfer of downstream data from headend 8 to client 22 and thus do not require the method set forth in the aforementioned claim, Examiner notes that Mohammed teaches that "data is

transmitted to client 22 on cable 20" (See Column 4 Lines 25-34) and thus is received by cable modem 28; and "cable modem 28 is also responsible for transmitting the Ethernet packets from client 22 to headend server 8 over cable 20" (See Column 5 Lines 27-31).

51. In response to Applicant's argument with regard to Claims 17 and 18 that the Examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). In this case, the Examiner has clearly indicated the teachings in the applied art that would result in the combination discussed in the above rejection.

52. In response to Applicant's arguments with regard to Claims 11 and 15 that Flynn does not mention cable modems nor provides a motivation to be combined with Neal, Mohammed, Johnson, or Pemmaraju, Examiner notes that Flynn is being relied upon as a teaching reference providing evidence that it was well known in the art that bus architectures such as those used by Neal could be constructed using ASB and APB. The Examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is

some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the device of Neal, Mohammed, Johnson, and Pemmaraju with the busses of Flynn, resulting in the inventions of Claim 11, in order to provide a low power system bus that supports burst-mode signaling, multiple bus masters, and high bandwidth signaling, and a lower power peripheral bus that has a low gate count and is static except when an I/O access occurs, thereby decoupling it from the high bandwidth activity of the system bus (See Page 25 Column 1 of Flynn).

53. In response to Applicant's arguments with regard to Claims 12, 13, 14, 19, and 20 that Goldberg discloses only a cable modem with an integrated, non-programmable media access controller, Examiner notes that because a media access controller requires some type of programming to perform its function, a media access controller is inherently programmable. Further, Examiner notes that Goldberg is being relied upon as a teaching reference providing evidence that a media access controller with separate upstream and downstream processors was well known in the art.

54. In response to Applicant's arguments that there is no motivation for providing the invention of Claim 9, from which Claim 12 depends, nor of Claim 17, from which Claim

20 depends, Examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the multi-processor multi-bus architecture of Neal with the cable modem interface and processor of Mohammed, the multi-processor task scheduler of Johnson, and the DMA controller and peripheral co-processors of Pemmaraju, resulting in the inventions of Claims 9 and 17, in order to provide broadband data delivery using existing infrastructure (See Column 1 Lines 39-47 of Mohammed); to allow multiple processes to be distributed among a plurality of processors and thus operated on in parallel to increase the speed of the system (See Column 3 Lines 21-24 of Johnson); to limit the physical space that the device will occupy on a printed circuit board (See Column 2 Lines 32-34 of Johnson); to coordinate the networking of the devices connected to the bus (See Column 1 Lines 62-65 and Column 6 Lines 13-18 of Pemmaraju); and to increase speed by allowing data to be transferred directly to a device without involving the CPU (See Column 7 Lines 50-52 of Pemmaraju).

Conclusion

55. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas J. Cleary whose telephone number is 703-305-5824. The examiner can normally be reached on Monday-Thursday (7-4:30), Alt. Fridays (7-3:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark H. Rinehart can be reached on 703-305-4815. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-5631.

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tjc

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